Site Inspection Narrative Report

Robert Wooler Company Site
Dresher, Montgomery County, PA
CERCLIS No. PAD987279387
Dump Site No. PA-2700

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Prepared for
U. S. Environmental Protection Agency Region III
CEPP and Site Assessment Section
Philadelphia, PA

SATA
Site Assessment Technical Assistance

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SITE INSPECTION NARRATIVE REPORT

1.0 INTRODUCTION

Under the authority of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) of 1980 and the Superfund Amendments and Reauthorization Act (SARA) of 1986, Margaret Jennis, Site Assessment Manager (SAM) of the U.S. Environmental Protection Agency (EPA) Region III Chemical Emergency Preparedness Program (CEPP) and Site Assessment Section, directed the Roy F. Weston, Inc. (WESTON®), Site Assessment Technical Assistance (SATA) team to conduct a site inspection (SI) at the Robert Wooler Company (RWC) Site (Site), Dresher, Montgomery County, Pennsylvania. The CERCLIS identification number for this site is PAD987279387 and the EPA Dump Site number (DSN) is PA-2700.

SATA conducted a site assessment trip on 18 February 1997, to verify site conditions and to identify potential private wells for inclusion in the sampling event. SATA conducted a site inspection (SI) sampling event on 31 March 1997. A total of 12 environmental samples, including quality assurance samples, were collected to determine whether, and to what extent, site-related hazardous substances have migrated into groundwater and surface water. The samples were sent to the EPA Laboratory in Annapolis, Maryland and analyzed for target compound list (TCL) organics, target analyte list (TAL) inorganics and pesticides. During the SI sampling event, SATA met with the current property owners at the site and verified information outlined in the preliminary assessment (PA) report prepared by Ecology and Environment, Inc., in 1993. A copy of the analytical data for this sampling event is provided in Appendix 1.

2.0 SITE DESCRIPTION

2.1 Location

The RWC is located on the northwest corner of the intersection of Limekiln Pike and Susquehanna Road in Dresher, Montgomery County, Pennsylvania (Reference 1). The site is located in a heavily populated suburban area 10 miles north of the City of Philadelphia (Reference 2). See Figure 1, Four Mile Radius Map, for the site location. The geographic coordinates for the site are 40°08'23" N latitude by 75°09'57" W longitude (Reference 1).

Montgomery County is characterized by a temperate climate with an average annual temperature of 54.3°F (Reference 3, pp. 1-23). Summers are mild with a mean temperature of 76.5°F; the mean temperature for the winter months is 31.2°F (Reference 3, pp. 1, 3, 19, 21). The average mean annual precipitation is 41.42

inches with an annual net precipitation of 6.92 inches (Reference 3, p. 45). The 2-year, 24-hour rainfall event will produce approximately 3.0 inches of rain (Reference 4, p. 95). The prevailing wind direction is from the west-southwest (Reference 3, p. 74).

2.2 Site Description

RWC is an active heat-treating facility located on a 43,050 square-foot triangular lot (Reference 5, p. 2-1). The property is not fenced; however, the actual facility is enclosed in warehouse and manufacturing areas (Reference 5, p. 2-1; Reference 6, p. 188). There are several areas on the property, not currently being utilized, that are covered with dense vegetation and grass (Reference 6, p. 189). See Figure 2, Site Layout Map, for a site sketch of the property layout. Materials used by the facility are stored within the enclosed areas, with the exception of a liquid nitrogen tank and an anhydrous ammonia tank (Reference 5, p. 2-2; Reference 6, p. 189). These above ground tanks are stored within a fenced area along the southern corner of the facility structure (Reference 6, p. 189). Both tanks are currently maintained by National Ammonia Company and are registered with the Pennsylvania Department of Environmental Protection (PADEP) (Reference 5, p. 2-1). There is a process supply well located beneath the main building which is approximately 200 feet deep (Reference 5, p. 1-2; Reference 6, p. 189).

The property is bounded along the eastern edge by Susquehanna Road (Reference 1). A steep driveway extends from Susquehanna Road to a parking area along the eastern edge of the facility building (Reference 6, p. 188). The site is adjacent to railroad tracks (Conrail) along the southern edge and Route 276 to the northwest (Reference 1). The southwestern edge of the property is adjacent to the Selas Corporation of America which is on the other side of a small rise (Reference 1). The Selas Corporation property was the subject of a 1989 site inspection report. Allied Concrete and Scotch Paper maintain facilities to the east of the site on the other side of Susquehanna Road. The closest residential property is approximately (b) (6) of the site location (Reference 5, p. 2-2).

2.3 Operational History and Waste Characteristics

RWC has been an active heat treating facility since the property was purchased from the Pennsylvania Railroad Company in 1939 (Reference 5, p. 2-2). RWC is the only facility known to have occupied the site location (Reference 5, p. 2-2). RWC is currently licensed (License No. PA-431) to operate two 7-microCurie dewpointers at the facility (Reference 5, p. 2-3; Reference 6, p. 188). These are

ORIGINAL (Red)

occasionally used to test materials treated or tested by the facility (Reference 5, p. 2-3).

As part of the facility's waste disposal system, a septic field was installed along the northwestern part of the property (Reference 5, p. 1-2). According to the operations manager the entire facility was connected to the septic field system until the early 1980s when RWC connected to the municipal sewer system (Reference 5, p. 1-2; Reference 6, p. 188). RWC reported no discharges of hazardous substances to the septic field during it's use (Reference 5, p. 2-1). According to company representatives, the septic field was backfilled at that time (Reference 5, p. 1-2; Reference 6, p. 189). Company representatives reported that the septic field was approximately 4 - 5 feet beneath the surface of the soil (Reference 6, p. 188).

In 1989, the Pennsylvania Department of Environmental Protection issued a notice of violation (NOV) to RWC for discharging algaecide (Reference 5, p. 2-5). In response to a citizen complaint, PADEP investigated a release to an unnamed tributary of Rapp Run. The unnamed tributary is located approximately 800 feet north of the Site and flows approximately east to west (Reference 1; Reference 5, p. 2-3). PADEP concluded that the facility was discharging an algaecide, which is considered toxic to fish, to a storm drain connection which flowed into the tributary (Reference 5, p. 2-3). The algaecide was used to clean the process water cooling towers. In response to the NOV, RWC severed the connection with the storm drain and obtained permits to discharge the algaecide to the municipal sewer system (Reference 5, p. 2-3). According to the Abington Wastewater Treatment Facility, the quantity discharged by RWC does not exceed the 350 gallons/month permit requirement (Reference 5, p. 4-1).

According to the operations manager at RWC, two trichloroethene (TCE) degreasing units were utilized from 1963 until 1985, to assist in cleaning the process line (Reference 5, p. 1-2). These units were maintained by Gold Shield, Inc., which, according to RWC, removed approximately 200 gallons of spent TCE a month and replaced it with clean TCE (Reference 5, p. 4-1). No spills or releases were reported by RWC during that period (Reference 5, p. 4-1). This information could not be confirmed by PADEP; however, no spills or releases had been reported in recent history (Reference 8).

In 1989, the RWC groundwater well, used exclusively for process supply, was one of the wells sampled as part of the site inspection at the adjacent Selas Corporation (Reference 5, p. 1-2; Reference 7, p. 5-2). The process supply well provides non-contact cooling water for the facility's heat treating process line

(Reference 5, p. 1-2; Reference 7, Appendix I). The RWC well contained notable levels of trichloroethene; 1,1-dichloroethene; 1,1,1-trichloroethane and trace amounts of 1,2-dichloroethene (Reference 5, p. 1-2; Reference 7, Section 7.1).

Municipal wastes are removed regularly or are recycled on site as needed (Reference 6, p. 188). There are no designated areas for waste accumulation, with the exception of the municipal waste containers within the facility (Reference 5, p. 4-1; Reference 6, p. 188). Spent mineral oil is stored in 55-gallon drums, on wooden pallets, along the process line prior to being recycled (Reference 5, p. 4-1; Reference 6, p. 188). No spills or releases of any hazardous substances have ever been reported by RWC (Reference 5, p. 4-1; Reference 8).

3.0 WASTE/SOURCE SAMPLING

3.1 Sample Locations

Only one potential waste source, the contaminated soils associated with the former RWC septic field, was identified in the PA report and other site file documents reviewed (Reference 5, p. 1-2). SATA was unable to identify the exact location of the septic field on the RWC property. Employees interviewed at the facility could not specify the field's location nor was adequate documentation found to identify potential sample locations or depths (Reference 6, p. 189). SATA determined that groundwater sampling results would be used to identify hazardous substances associated with the Site. The RWC process supply well, initially identified as contaminated in 1989, was re-sampled as part of the 1997 SI (Reference 5, p. 1-2; Reference 7, Section 7.1). Table 3.1 identifies the sample locations used for the 1997 SI.

Table 3.1
Sample Locations (1997 SI)

Sample Identifier	Sample Type	Location	Date/Time Collected
RWSS-01	Surficial Sediment	Unnamed tributary, approximately 24 inches downstream of the storm sewer outfall for Susquehanna Road	3/31/97 @ 1105 hrs.

Sample Identifier	Sample Type	Location	Date/Time Collected
RWSS-02	Surficial Sediments	Unnamed tributary, approximately 200 feet upstream from the storm sewer outfall for Susquehanna Road	3/31/97 @ 1105 hrs.
RWGW-01	Aqueous	RWC on-site well	3/31/97 @ 0918 hrs.
RWGW-02	Aqueous	(b) (9)	3/31/97 @ 1040 hrs.
RWGW-03	Aqueous	(b) (9)	3/31/97 @ 1315 hrs.
RWGW-04	Aqueous	Commercial well, 0.85 miles southwest of site	3/31/97 @ 1315 hrs.
RWGW-05	Aqueous	(b) (9)	3/31/97 @ 1145 hrs.
RWSW-01	Aqueous	Unnamed tributary, approximately 24 inches downstream of the storm sewer outfall for Susquehanna Road	3/31/97 @ 1110 hrs.
RWSW-02	Aqueous	Unnamed tributary, approximately 200 feet downstream of the storm sewer outfall for Susquehanna Road	3/31/97 @ 1245 hrs.
RWSW-03	Aqueous	Mouth of unnamed tributary to Rapp Run, approximately 2 miles downstream	3/31/97 @ 1220 hrs.
RWGW-06	Aqueous	(b) (9)	3/31/97 @ 1145 hrs.
BL-01	Aqueous	Trip blank	3/31/97 @ 0800 hrs.

3.2 Analytical Results

Analysis of the well at the RWC showed elevated levels of chlorinated solvents including 1,1-dichloroethene (10.8 parts per billion (ppb)); tetrachloroethene (6 ppb); 1,1,1-trichloroethane (7.4 ppb) and trichloroethene (36.9 ppb). A complete listing of the analytical results for the 1997 SI sampling event can be found as Appendix 1.

3.3 Summary

Sample RWGW01, the groundwater sample collected from the process supply well on the Robert Wooler property, is contaminated with several chlorinated compounds. The compounds detected in the 1997 SI sampling event were found at levels lower than were identified in the 1989 sampling event. Table 3.2 summarizes this finding. According to RWC officials, this well is used for process cooling water and not as a potable supply (Reference 5, p. 1-2; Reference 7, Appendix I).

Table 3.2
RWC Well Data Comparison, 1989 and 1997

Hazardous Substance Detected	1989 Sampling Event (µg/L)	1997 Sampling Event (µg/L)
1,1-dichloroethene	52	11
tetrachloroethene	22	6
1,1,1-trichloroethane	52	7.4
trichloroethene	270	37
1,2-dichloroethene	2 (J)*	0.9 (J)**

J - Compound was detected; however, value should be considered estimated
* - Total for both cis and trans isomers.
** - Cis isomer only.

No samples were collected from the former septic field; however, groundwater beneath the RWC has been shown to be contaminated with notable concentrations of chlorinated volatile organics, particularly with TCE. Two TCE degreasing units were used at RWC for more than 20 years, with an estimated 200 gallons of spent TCE being removed each month and replaced with clean solvent. Although there are no records that TCE was spilled or released or discharged to the RWC septic field, the higher concentration of VOCs found in the on-site well compared to other area wells sampled in both 1989 and 1997 indicates that the RWC Site is a source of the groundwater contamination.

4.0 GROUNDWATER PATHWAY

4.1 Hydrogeologic Setting

The RWC site is located within the Triassic Lowlands Section of the Piedmont Physiographic Province (Reference 5, p. 3-5) The structures in this section are commonly referred to as the Newark Group, a 16,000 to 20,000 foot section of non-marine sedimentary rocks and associated intrusive and extrusive basic rock

structures (Reference 5, p. 3-5). The Newark Group was deposited in the Newark Basin, which was part of a fracture system that occurred during Mesozoic Time, by the widening of the Atlantic Basin and separation of the continents (Reference 5, p. 3-5). The Piedmont Uplands Section of the Piedmont Physiographic Province is present along the southern edge of the site and consists of Precambrian to Ordovician age metamorphic and igneous rock (Reference 5, p. 3-5). The Atlantic Coastal Plain Province rocks are located throughout the four-mile study area (Reference 7, p. 3-4). These sediments are mainly marine and fluvial deposits of clay silt, sand and gravel of late Cretaceous and Tertiary age (Reference 7, p. 3-4). The site area has a dendritic geomorphic drainage pattern and a surface topography of broad, shallow valleys and rolling hills (Reference 5, p. 3-5).

The history of the Newark Basin can be applied to all six Triassic rift valleys that run from Nova Scotia to North Carolina (Reference 5, p. 3-5). These half-graben basins were formed during the Palisade Disturbance (Reference 5, p. 3-5). The basin lies unconformably upon a structural complex of lower Paleozoic quartzites/carbonates and Precambrian granite/gniess (Reference 5, p. 3-6). Located to the south-southwest are the lower Paleozoic and Precambrian rocks of the Piedmont Province (Reference 5, p. 3-6). The shape and extent of the original depositional basin was very similar to the present form of the outcrop belt and closely follow the regional grain of Appalachian structures (Reference 5, p. 3-6). Continuous downfalling has produced a regional dip of 10 to 20 degrees to the northwest (Reference 5, p. 3-6).

Discordant, basin-shaped sheets and cross-cutting dikes of diabase intruded the Newark Group in late Triassic period; therefore, their stratigraphic position varies throughout the study area (Reference 5, p. 3-7). A predominant dike of diabase is located approximately 0.75 miles northwest of the site (Reference 5, p. 3-7). The diabase rock is dark gray to black, dense, fine grained and consists of 90-95 percent labradorite and augite (Reference 5, p. 3-7). These rocks are characteristic of rift valley sequences and were emplaced during episodes of tensional rifting associated with the widening of the Atlantic Basin. The dikes are approximately 5 to 100 feet thick, while the sheets are expected to be much thicker (Reference 5, p. 3-7).

The northern section of the four-mile study area is underlain by the Triassic age Stockton Formation (Reference 5, p. 3-6). The Stockton Formation consists of a lower conglomerate arkose member, a middle arkosic sandstone member and an upper mudstone member (Reference 5, p. 3-6). The lower yellow-gray conglomerate deposits consist of relatively dispersed, moderately rounded clasts

of quartz, quartzite, limestone and feldspar (Reference 5, p. 3-6). These clasts, averaging one inch in diameter, are set in a poorly arksoic matrix (Reference 5, p. 3-6). The middle sandstone member is a fine to medium-grained, lightly yellowish-gray to pale reddish-brown, fairly well-sorted arkosic sandstone (Reference 5, p. 3-6). The upper mudstone is reddish-brown in color and is mostly feldspathic (Reference 5, p. 3-6). The abundance of feldspar in the Stockton Formation implies a continuous supply from a soda-rich, metamorphosed Paleozoic source east and south of the Newark Basin (Reference 5, p. 3-6). The erosion of these crystalline eastern and southern highlands spread Stockton sediments across the basin, forming extensive flood-plain deposits (Reference 5, p. 3-6). Fossil fauna such as ferns, conifers, ginkos, mollusks, labyrinthodont, amphibians and phytosaur reptiles suggest a severe fluvial and flood-plain paleoenvironment for the Stockton Formation (Reference 5, p. 3-6). The formation reaches a maximum thickness of approximately 6000 feet near the Montgomery/Bucks County line (approximately five miles northeast of the site) (Reference 5, p. 3-6). Several municipal wells within the four-mile study area are completed in this water bearing formation (Reference 5, pp. 3-1 to 3-4)

The southern edge of the four-mile site is underlain by the Cambrian age Chickies Formation (Reference 5, p. 3-6). The Chickies Formation consists of thick-bedded, light gray to white, hard quartzite and quartz schist that is thin bedded in the upper part and locally disintegrates into a fine white siliceous clay (Reference 5, p. 3-6). The basal Hellam Conglomerate Member consists of a course cobble conglomerate composed of well rounded cobbles (3 to 6 inches in diameter) and milky white pebbles (up to 0.5 inches in diameter) in a fine quartz matrix (Reference 5, p. 3-6). The Formation is approximately 400 feet thick and contains fossil Scolithus Tubes which indicate a shelfal paleoenvironment (Reference 5, p. 3-7).

Stratigraphically younger than the Chickies Formation and outcropping approximately 0.5 miles south of the site is the Cambrian age Ledger Formation (Reference 5, p. 3-7). The Ledger Formation is a massive, very light gray to light gray, medium to coarsely crystalline, sparking dolomite (Reference 5, p. 3-7). The Ledger formation is estimated to be approximately 1000 feet thick (Reference 5, p. 3-7). Some of the wells within the four-mile study area are completed into this water bearing formation (Reference 5, pp. 3-2 to 3-4)

Stratigraphically younger than the Ledger Formation and outcropping approximately one mile south of the site is the Cambrian age Elbrook Limestone (Reference 7, p. 3-7). The Elbrook Limestone is a light blue to gray, finely laminated, fine-grained marble, containing some interbeds of dolomite and

limestone (Reference 7, p. 3-7). The Elbrook is estimated to be approximately 300 feet thick (Reference 7, p. 3-7). There were no wells found in the four-mile study area that were completed in this water bearing formation.

Stratigraphically younger than the Elbrook Formation and outcropping approximately 1.5 miles south from the site is the Cambrian age Conestoga Formation (Reference 7, p. 3-7). The Conestoga Formation, much of which contains micaceous beds, consists of medium gray, fine to coarse-grained crystalline limestone with commonly occurring clay laminae (Reference 7, p. 3-7). The base of this formation is usually marked by beds of conglomerate containing carbonate clasts (Reference 7, p. 3-7). These clasts can range in size from pebbles to boulders and can be of similar or different lithology than the matrix (Reference 7, p. 3-7). Coarsely crystalline, silty and sandy limestones also occur near the base of the formation (Reference 7, p. 3-7). The thickness of the Conestoga Formation can not be accurately determined due to extensive folding; however, most estimates placed the thickness at approximately 1000 feet (Reference 7, p. 3-7). There were no wells found within the four-mile study area that were completed in this water bearing formation.

Stratigraphically older than the Chickies Formation and outcropping approximately 0.4 miles northeast of the site is the Precambrian age felsic gneiss, pyroxene-bearing species (granite gneiss) (Reference 7, p. 3-7). The felsic gneiss is light buff to light pink in color with fine to medium grain. It is composed of quartz, mirocline, hornblende and some biotite with an unknown thickness (Reference 7, p. 3-7).

Also stratigraphically older than the Chickies Formation and outcropping approximately 2.8 miles south of the site is the Precambrian or Lower Paleozoic age Wissahickon Formation (Reference 7, p. 3-7). The facies present in the four-mile study area are an oligoclase-mica schist, a finely plicated, medium grained, dark gray rock composed of biotite, muscovite and quartz with a variable amount of feldspar and chlorite (Reference 7, p. 3-7). Distinct veins of quartz are interbanded in the schist and cleavage/jointing are conspicuous (Reference 7, p. 3-7). The thickness of the Wissahickon Formation is estimated at approximately 8000 to 10,000 feet (Reference 7, p. 3-7).

Stratigraphically younger than the Stockton Formation and outcropping throughout the study area are the Bridgeton and Pennsauken Formations (undifferentiated) (Reference 7, p. 3-8). The Bridgeton Formation is the older of the two and is a yellow, white, or irregularly stained reddish to orange brown, extensively crossbedded clayey sand (Reference 7, p. 3-8). Present locally are

beds of gravel composed of quartz, chert and quartzite (Reference 7, p. 3-8). The presence of horizontal gravel beds, crossbedding in the sands and the lenses of gravel suggest a fluvial paleoenvironment for both formations (Reference 7, p. 3-8). The Pennsauken Formation is a yellow to dark reddish-brown, extensively crossbedded cemented sand (Reference 7, p. 3-8). It contains interbedded coarse grained gravels composed of quartz, quartzite and chert in addition to pebbles and cobbles of shale, sandstone and crystalline rocks eroded from Mesozoic and Precambrian age formations (Reference 7, p. 3-8). Both formations are estimated to be approximately 30 feet thick (Reference 7, p. 3-8).

Stratigraphically older than the Bridgeton and Pennsauken Formations and also outcropping throughout the four-mile study areas is the Cretaceous age Patapsco Formation (Reference 7, p. 3-8). The Patapsco Formation is a red, gray and chocolate colored, variegated clay that is interbedded with sandy clay, light-colored sand and gravelly sand (Reference 7, p. 3-8). The formation is approximately 80 feet thick as reported in Maryland (Reference 7, p. 3-8).

Depth to groundwater beneath the RWC Site is not known; however, groundwater was encountered in monitoring wells completed in the Stockton Formation at depths of 23 to 29 feet at the adjacent Selas Corporation which is located approximately 650 feet southeast of RWC (Reference 7, Appendix G).

4.2 Targets

Most residences within four miles of RWC utilize municipal water connections for their potable water supply (Reference 9). There are five separate municipal water authorities within the four mile study area, with a combined total of 105 groundwater or surface water intakes (Reference 10, Appendix B). Thirty-six groundwater supply wells are located within the study area. SATA identified two wells being the closest municipal wells to the site at approximately (b) (9) from the site (north and southeast) (Reference 9). Figure 3, Municipal Well Location Map, illustrates the location of these wells relative to RWC.

The Ambler Borough Water Department (ABWD) supplies drinking water to approximately 25,000 people in Ambler and Fort Washington Townships (Reference 5, p. 3-3). ABWD operates nine deep groundwater wells and one shallow well the closest of which is located approximately (b) (9) f the site (Reference 9). The deep wells are completed in the Stockton Formation ranging from 290 to 500 feet deep, while the shallow well, is 58 feet deep and is completed in the Ledger Formation (Reference 5, p. 3-3). The majority of the

ABWD wells within (b) (9) f the site (Reference 9). ABWD has three emergency interconnections with neighboring authorities (Reference 9).

The Hatboro Borough Water Authority (HBWA) supplies drinking water to approximately 19,000 persons in Hatboro Borough and approximately 62,000 persons, through four interconnections, in Horsham and Lower Moreland Townships (Reference 5, p. 3-3; Reference 10, Appendix B). HBWA utilizes 11 groundwater wells, seven of which are located within the four-mile study area (Reference 9). The closest well is located approximately (b) (9) f the site location (Reference 9). All of the wells are completed within the Stockton Formation (Reference 5, p. 3-3).

The Horsham Township Authority (HTA) provides drinking water to approximately 18,000 persons in Horsham and Maple Glen and supplies approximately 3,000 additional persons through two interconnections (Reference 5, p. 3-2; Reference 10, Appendix B). HTA maintains 14 groundwater wells, nine of which are within the four-mile study area (Reference 9). The closest well is located approximately (b) (9) of the site (Reference 9). All wells are completed in the Stockton Formation and range from 271 to 625 feet in depth (Reference 5, p. 3-3).

The North Wales Water Authority (NWWA) supplies drinking water to Upper Gwynedd, Lower Gwynedd, Whitpain, Upper Dublin and Montgomery Townships (Reference 5, p. 3-2). NWWA utilizes 25 groundwater wells and maintains 6 supply connections with neighboring authorities. NWWA supplies approximately 50,000 people with potable water (Reference 5, p. 3-2; Reference 10, Appendix B). Five wells are located within the four-mile study area, the closest being located approximately (b) (9) of the site (Reference 9). The wells range in depth from 550 to 600 feet and are completed in the Stockton Formation (Reference 5, p. 3-3).

Philadelphia Suburban Water Company (PSWC) supplies drinking water to Abington, Cheltenham, Lower Moreland, Springfield, Upper Dublin, Upper Moreland and Whitemarsh Townships (Reference 5, p. 3-2). PSWC obtains water from six surface intakes, one reservoir, 39 groundwater wells and one supply interconnection (Reference 10, Appendix B). The Upper Merion Reservoir is a groundwater fed reservoir, that was a rock quarry into the Ledger Formation and is estimated to be approximately 400 feet deep (Reference 5, p. 3-1). The reservoir is also located outside the four-mile study area (Reference 9). Six of PSWC's 39 groundwater wells are located within the four-mile study area (Reference 9). According to a representative of PSWC, all of the wells are

routinely monitored via laboratory analysis to determine if volatile organic compounds (VOCs) are present in the groundwater (Reference 11). Two groundwater wells are currently connected to air stripping units to remove levels of VOCs (Reference 11). According to PADEP, PSWC has been in compliance with state water quality requirements for several years (Reference 8). PSWC supplies drinking water to approximately 844,000 persons (Reference 5, p. 3-2; Reference 10, Appendix B).

In addition to the above municipal wells, several non-municipal groundwater wells were identified within the four-mile study area. SATA identified the closest well to be located approximately 0.9 miles southwest of the Site (Reference 13). The PA reports wells closer than this; however, SATA was unable to confirm this information (Reference 5, p. 3-4). The SATA identified well is used as a commercial potable water supply and has a staff of approximately 40 workers (Reference 12). This facility also has a municipal supply connection that is utilized occasionally (Reference 12). Approximately 98% of the private properties in the study area are connected to one of the above municipal suppliers (Reference 13).

The exact number of groundwater wells within the four-mile study area is unknown. Areas that are considered connected to a municipal authority may also utilize a domestic well to supplement their water needs (as indicated in the above commercial well). Table 4-1 indicates an estimated number of wells and groundwater users within the four-mile study area. The number of wells identified as being within one mile of the site were identified in the PA report (Reference 5, p. 3-4). The number of users for these wells were calculated using the average number of persons per household for Montgomery County (2.58 persons/household) (Reference 14, p. 468). Wells identified as being located between one and four miles from the site are municipal wells as identified by the Montgomery County Planning Commission. (Reference 9). The number of users for each well were calculated as found in Appendix 2.

Table 4-1
Number of Drinking Wells in the 1997 SI Study Area

Distance from Site	Approximate Number of Wells	Approximate Number of Users
(b) (9)	0	0
	0	0
	25	65
	8	60
	6	75,011
	12	42,074
	17	88,332
Totals	**63**	**205,542**

4.3 Sample Locations

As part of the March 1997 SI, SATA collected three domestic well samples, one commercial well sample and one sample from the RWC process supply well. In addition, one duplicate sample and one trip blank sample were collected during the sampling event for analytical data qualification purposes. Table 4-2 summarizes the sample identification information, sample locations and objectives, matrix information and the date and time the samples were collected. Each sample was analyzed for target compound list (TCL) organics and target analyte list (TAL) inorganics.

Table 4-2
Groundwater Pathway Samples for 1997 SI

Sample No.	Sample Type	Location/Objective	Date/Time Collected
RWGW01	Aqueous	On-site well/confirm release to groundwater	3/31/97 @ 0918 hrs.
RWGW02	Aqueous	(b) (9)	3/31/97 @ 1040 hrs.
RWGW03	Aqueous		3/31/97 @ 1315 hrs.

ORIGINAL (Red)

Sample No.	Sample Type	Location/Objective	Date/Time Collected
RWGW04	Aqueous	Commercial well approximately 0.9 miles southwest of RWC/determine if well southwest of site was contaminated	3/31/97 @ 1015 hrs.
RWGW05*	Aqueous	(b) (9)	3/31/97 @ 1145 hrs.

* - This well was also sampled as part of the 1989 Selas SI.

Figure 4, 1997 SI Sample Location Map, shows the sample locations in relation to the site and Appendix 1 provides the summary of the analytical data for each sample.

4.4 Analytical Results

Sample RWGW01, collected from the RWC process supply well, contained elevated concentrations of four chlorinated volatile organics. As in 1989, TCE was found at the highest concentration (Reference 5, p. 1-2; Reference 7, Appendix I). Sample RWGW01 also exhibited estimated concentrations of two other chlorinated VOCs and of chloroform.

Sample RWGW04, collected from a commercial supply well (0.85 miles southwest of the site), contained chloroform as well as estimated concentrations of three chlorinated VOCs. These three VOCs were also detected in the RWC well sample, most at substantially higher concentrations. Sample RWGW05, collected from a domestic well (1 mile northeast of site), contained a small amount of chloroform. The remaining groundwater samples showed no VOC contamination.

4.5 Summary

Several chlorinated VOCs, most notably TCE, were detected in the groundwater sample collected from the RWC well during this SI. Although there is no record of chlorinated VOC releases from the site and no subsurface soils were collected from the former RWC septic field area, the levels of TCE (and most other chlorinated VOCs) detected in the on-site well are consistently higher than levels found in wells sampled in the vicinity of the Site. Also, significant quantities of

spent TCE were generated as part of RWC operations. The concentration of TCE, as well as the concentrations of 1-DCE and PCE detected in the RWC well in 1997, are above the current maximum contaminant levels (MCL) for drinking water set by EPA in accordance with the Safe Drinking Water Act (Reference 15). The concentrations of these three hazardous substances are also above cancer-risk screening concentrations (Reference 16). The RWC well, according to company officials, is used to supply process cooling water only and is not used to provide potable water (Reference 5, p. 1-2; Reference 7, p. 5-3).

A nearby drinking water well (RWGW-04), showed trace amounts of hazardous substances similar to those found in the on-site well. Approximately 83 people within a one-mile radius of the Site rely on private wells to provide drinking water (Reference 1; Reference 5, p. 3-4; Reference 21). The two closest municipal groundwater wells are located approximately (b) (9) of the Site (Reference 9).

The most meaningful groundwater conclusions that can be drawn require a comparison of the 1989 and 1997 sample results. TCE levels in the on-site well dropped from 270 µg/L to 36.9 µg/L. Concentrations of all other chlorinated VOCs detected in the RWC well also dropped dramatically. The SI sample results for a private drinking water well located about one mile east of the Site can also be compared to 1989 VOC results. Both sets of data (sample RWGW05 and HW-3) confirm that only a trace amount of chloroform, but no chlorinated VOCs, are present in this well (Reference 7, Appendix I; Appendix 1).

5.0 SURFACE WATER PATHWAY

5.1 Hydraulic Setting

Drainage from the site flows downgradient to the north-northwest into an unnamed perennially-flowing stream approximately 800 feet from the northern edge of the site property (Reference 1). There is a storm drain outfall located approximately 24 inches from where it appears the surface drainage enters the stream (Reference 6, p. 189). Figure 5 shows the approximate locations of the surface water drainage from the site. The stream flows northeast to southwest for approximately 2 miles where it feeds into Rapp Run, approximately 500 feet north-northwest from the intersection of Virginia Avenue and Camp Hill Road (Reference 1; Reference 17). Rapp Run, also a perennial stream, flows in a southerly direction for approximately 0.5 miles and enters Sandy Run (Reference 17). Sandy Run then flows north and west for approximately 1.3 miles to its

confluence with Wissahickon Creek (Reference 17). Wissahickon Creek flows for approximately 11.5 miles south to it's confluence with the Schuylkill River and has a flow rate of 103 cubic feet per second at this point (Reference 17; Reference 20). Figure 6 shows the location of the surface water bodies involved with this inspection and the surface water migration route from the RWC downstream to the Schuylkill River. The site location is considered to be outside of the 500-year flood plain (Reference 18).

5.2 Targets

There are no drinking water intakes within the 15 miles downstream of the Site location (Reference 5, p. 3-1; Reference 7, p. 3-1; Reference 17). Wissahickon Creek is listed by Pennsylvania Department of Fish and Wildlife (PAFW) as a trout stocked fishery and as a first priority scenic river (Reference 5, p. 3-4). The Schuylkill River is listed by PAFW as a warm water fishery, a habitat for migratory fishes and a first priority scenic river (Reference 5, p. 3-5). SATA could not confirm whether Rapp Run or the unnamed tributary are used for recreational fishing.

The closest downstream wetlands are located approximately one mile downstream from the Site (Reference 20). This area has approximately 0.12 miles of frontage along the unnamed tributary (Reference 20). There are approximately 0.41 miles of wetlands listed along Rapp Run, 0.32 miles of wetlands along Sandy Run, and 2.77 miles of wetlands frontage along the remainder of the 15-mile downstream study area in the Wissahickon Creek (Reference 20). Figure 7, Wetland Location Map, illustrates the location of these wetland environments and their position downstream from the Site.

5.3 Sample Locations

SATA collected aqueous and sediment samples in the area of the storm sewer outfall into the unnamed tributary. The furthest downstream aqueous sample was collected from the confluence of the unnamed tributary and Rapp Run, approximately two miles downstream. Table 5-1 identifies the aqueous and sediment samples collected, their locations and objectives, and the date/time they were collected. Figure 5 shows the sample locations in relation to the site location and surface water flow.

Table 5-1
Surface Water Sample Summary for 1997 SI

SAMPLE No.	Sample Type	LOCATION/OBJECTIVE	DATE/TIME Collected
RWSW01	Aqueous	Unnamed tributary, approximately 24 inches downstream of the storm sewer outfall for Susquehanna Road/ determine if contamination existed in surface water body	3/31/97 @ 1110 hrs.
RWSW02	Aqueous	Unnamed tributary, approximately 200 feet downstream of the storm sewer outfall for Susquehanna Road/ determine if contamination existed downstream from RWC	3/31/97 @ 1245 hrs.
RWSW03	Aqueous	Mouth of unnamed tributary to Rapp Run, approximately 2 miles downstream/ determine if contamination existed downstream from RWC	3/31/97 @ 1220 hrs.
RWSS01	Sediment	Unnamed tributary, approximately 24 inches downstream of the storm sewer outfall for Susquehanna Road/ determine if surface sediments were contaminated	3/31/97 @ 1105 hrs.
RWSS02	Sediment	Unnamed tributary, approximately 200 feet upstream from the storm sewer outfall for Susquehanna Road/ determine if contamination existed downstream from RWC	3/31/97 @ 1105 hrs.

5.4 Analytical Results

A small amount of TCE (1.2 ug/L) was detected in aqueous sample RWSW02 collected about 200 feet downstream of the Site. Furthermore, TCE was detected at estimated concentrations in the aqueous and sediment samples collected near the storm sewer outfall (samples RWSW01 and RWSS01, respectively) but was not found in the upstream sample (sediment sample RWSS02). In addition to TCE, downstream sample RWSW02 also contained estimated concentrations of four other chlorinated VOCs. These chlorinated VOCs were not detected in the upstream sample but were found in the groundwater beneath the RWC Site.

Acetone was detected in both upstream and downstream samples. No inorganic substances were found to be elevated above background levels in the samples collected from the unnamed tributary. See Appendix 1 for a summary of the analytical data.

5.5 Summary

A release of TCE from the Site into the unnamed tributary to Rapp Run was evidenced by the presence of TCE downstream of RWC and near the storm sewer outfall location but not at the upstream sample location.

Site-related hazardous substances were not detected in the farthest downstream sample (sample RWSW-03). Sample RWSW-03 was collected downstream of the nearest wetlands, and at the confluence of the unnamed tributary with Rapp Run.

6.0 SOIL EXPOSURE AND AIR PATHWAYS

6.1 Physical Conditions

The Site is still an active heat treating/testing facility located in a light commercial/ industrial zone (Reference 6, p.188). The majority of the RWC property is covered by asphalt or concrete with two main entrances to the facility along the eastern edge of the Site, along Susquehanna Road (Reference 5, p. 2-1; Reference 6, p. 188). The rest of the Site is vegetated with scrub brush and grass (Reference 5, p. 2-1; Reference 6, p. 189). There is no fence surrounding the Site and the property is relatively unsecured (Reference 5, p. 2-8; Reference 6, p. 189). The property slopes from the southwest to the northeast, with surface water drainage as described in Section 5.1 (Reference 1). The former septic fields are believed to be located along the western side of the property, in an area primarily covered with grass and scrub brush (Reference 5, p. 2-8; Reference 6, p. 189).

6.2 Soil and Air Targets

RWC, which employs approximately 40 workers, is located in a heavily developed area of Montgomery County (Reference 1; Reference 5, p. 3-11). There are several residential communities in the vicinity and two public golf courses within one mile of the site (Reference 1; Reference 5, p. 3-11). The closest residential property to RWC is approximately (b) (9) the site. There are approximately 2416 persons living within one mile of the RWC

(Reference 5, p. 2-2). Table 6.1 shows the population breakdown in the study area utilizing a house count within a four mile area around the RWC and estimating 2.58 persons per household (Reference 14). Figure 1 illustrates the study area considered for this SI report.

Table 6.1
Population Distribution for 1997 SI

Distance from Site (miles)	Approximate Population
On Site	0
0 to 0.25 mile	40
0.25 to 0.5 mile	791
0.5 to 1 mile	1585
1 to 2 miles	19,645
2 to 3 miles	26,845
3 to 4 miles	55,165
TOTAL	104,111

6.3 Soil Sample Locations

No soil samples were collected during this site inspection. During the site reconnaissance, there were no visibly-contaminated areas on the site property. The area suspected to be the location of the former septic field was heavily vegetated and showed no signs of stressed conditions (Reference 6, p. 189). As mentioned above, according to RWC representatives, the septic fields were estimated at being buried greater than three feet beneath the surface. This condition makes it improbable that surface soil contamination exists.

6.4 Soil Analytical Results

No soil samples were collected during this site inspection.

6.5 Air Monitoring

During the sampling event, a Photovac Microtip, Model HL-2000, was used to detect the presence of organic vapors at each sample collection location. No readings above background were identified during the sampling event (Reference 6, p. 189-190). No formal air monitoring/sampling program was instituted for this site inspection.

6.6 Summary

The Site is an active facility with all work being conducted within the on-site buildings. There are no on-site residents. No surficial soil samples were collected during this SI. The area suspected to be the location of the former septic field was heavily vegetated and showed no signs of being stressed. There was no indication of a release to the air pathway.

7.0 SUMMARY

The RWC SI attempted to gather data necessary to assess the threat posed to human health and the environment, and to evaluate the Site using EPA's hazardous waste site ranking model. Groundwater and surface water samples were collected and analyzed to confirm the presence of hazardous substances in the on-site well, and to determine if site-related hazardous substances have migrated off site into nearby drinking water wells and adjacent surface water bodies. In addition, information was collected to update groundwater usage in the site area and to identify surface water environments and fisheries potentially at risk from the Site.

The RWC Site, an active commercial heat treatment facility in operation since 1939, was targeted for investigation under CERCLA after sampling of the on-site well revealed it was contaminated with TCE; PCE; 1,1,1-TCA and 1,1-DCE in 1989. RWC uses the well to supply non-contact cooling water for the heat treating equipment. RWC maintained two on-site degreasers that used TCE from 1963 until 1985. Although no spills or releases of TCE were reported, RWC maintained an on-site septic field until it was connected to the municipal sewer system in the early 1980s. The septic system was backfilled when the facility was connected to the municipal system.

The SI confirmed contamination of the on-site well with chlorinated VOCs but at substantially lower concentrations than those detected in 1989. A nearby drinking water well that was sampled in 1989 was also resampled; SI results confirm that this well is not contaminated with VOCs. Trace amounts of the same hazardous substances found in the on-site well were also detected in a commercial supply well. This well is located approximately 0.9 miles southwest of RWC. The closest municipal wells are approximately (b) (9) of the Site. Approximately 205,542 people within a four-mile radius from the Site rely on groundwater wells for potable water.

Evidence of a release from the RWC Site was found in samples collected from the nearby unnamed tributary to Rapp Run. TCE, which was not detected in the upstream sample, was detected at a minimal concentration in an aqueous sample collected 200 feet downstream from RWC and in samples collected near the storm sewer outfall location.

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ATTACHMENT: 1 - Reference Citations